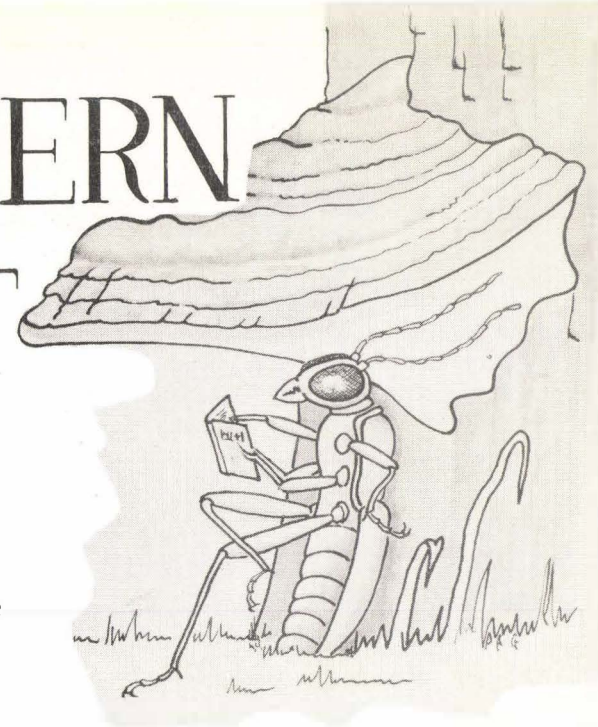
NORTHEASTERN FOREST PEST REPORTER



United States Department of Agriculture • Forest Service

Northeastern Forest Experiment Station

No. 1 July 10, 1958

The direct and indirect effects of last year's drought and the influence of this spring's cold and generally wet weather should give rise to very interesting forest pest conditions throughout the Northeast. These weather factors, which basically determine the kind and amount of insect and disease activity, may either abet or work in opposition to one another. Truly secondary pests, favored by the drought, may be depressed in numbers or their effects nullified by the ebullient growing conditions of their hosts. In contrast, certain primary pests, such as foliage diseases and rusts, may be unusually abundant due to the cool, moist conditions this spring. The record this year will speak for itself.

FOREST INSECTS

SPRUCE BUDWORM (Choristoneura fumiferana) Approximately 300,000 acres in northeastern Aroostook County, Maine were sprayed with DDT by airplane between June 10 and June 20. Balsam fir and spruce in the treated area had undergone 5 - 9 years of light to severe defoliation, and egg mass surveys in 1957 had indicated heavy populations would be present again in 1958. Eight converted torpedo bombers (TBM's) with up to 900 gallons capacity and 2 Stearmans were used to apply the spray at a rate of 1 lb. DDT in 1 gallon of oil solution per acre. The TBM's have an effective swath of 400 feet and disperse 120 gallons of spray per minute; the standard swath distance for Stearmans is 100 feet and the dispersal rate is about 20 gallons per minute. The planes flew in pairs and a lead or guide plane was assigned to each pair. State and U.S. Forest Service personnel cooperated both in the airfield operations and the entomological field work. Considerable technical advice was given by B.W. Flieger and staff of Forest Protection Ltd., Campbellton, N.B. Two field laboratories were established to carry out the necessary studies for timing spray application and assessing results. Regular surveys of the budworm infestation and the status of budworm parasites throughout northern Maine are also being conducted from these field laboratories. An aquatic entomologist is studying the effect of the spraying on stream insects, and fish biologists of the State Fish and Game Dept. are investigating the reactions of the finny tribe.

PINE SAWFLIES The European pine sawfly (Neodriprion sertifer) is reported active at scattered locations in New York, Connecticut, New Jersey, and Pennsylvania. Hatching initiated April 29 in Carbon County, Pa. Larval development in the vicinity of Kresgeville was as follows: 2nd instar May 13, 3rd instar May 19, 4th instar May 22, and 5th instar May 26. Good control was obtained on 5 acres near Kunkletown, Pa., with a virus suspension of 18,000 polyhedra per ml. per gallon of water, applied with a hydraulic sprayer. The stock solution was supplied by the New Haven Forest Insect Laboratory. The Virginia pine sawfly (N. pratti pratti) is again abundant in Charles, Montgomery, Howard, and Prince Georges Counties, Md. First larvae of the season were found on April 21 and feeding continued until late May. An aerial survey conducted May 26 and 27 revealed noticeable defoliation over a gross area of 2-3/4 million acres. As only 14 percent of this area is in pine type, about 327,000 acres of pine were actually defoliated. Of this, 12,000 acres were classed as severe and the remainder at moderate. Sawflies, chiefly N. pratti paradoxicus, are locally abundant in many spots in southern New Jersey on pitch and shortleaf pines. This is a continuing infestation. The red pine sawfly (N. nanulus) is now at a generally low ebb in northern New York. Noticeable feeding was reported, however, in Franklin County.

SPITTLEBUGS (Aphrophora spp.) Reported more common than usual this year on pitch and shortleaf pines in southern New Jersey and on loblolly pine on the upper Eastern Shore of Maryland and in Delaware. A. parallela reported abundant on pines in northeastern Pennsylvania and in Hampshire County, West Virginia.

SHOOT AND TIP MOTHS European pine shoot moth (Rhyacionia buoliana) populations are particularly high this year in southeastern Carbon County, Pa. Larvae were in the final instar on May 13 and pupae by June 6. Adult emergence was observed in Susquehanna County, Pa. on June 20 and between June 20 and 27 in New Jersey. Heavy infestations of a tip moth, possibly Eucosma sp., are present on red pine in portions of Jefferson, Lewis, and Oswego Counties, New York. Some similar damage was noted also on white and Scotch pines. In Berks County, Pa., a Eucosma is causing moderate to severe loss of leaders of Scotch pines. Small mines and early instar larvae of this insect were observed May 30 and pupation began about June 22. Nantucket pine tip moth (Rhyacionia frustrana) is causing serious damage to natural and planted pines in eastern Maryland. A 30-acre planting of loblolly pine has been completely destroyed by tip moth and supplementary agents. Some cases of tip injury to white pine have been reported as caused by this insect.

WHITE-PINE WEEVIL (Pissodes strobi) Damage to Scotch pine by this pest in St. Lawrence County, New York, is apparently increasing. More severe infestations expected in 1958. Adults were found ovipositing in white pine leaders April 18 in Berks County and April 22 in Adams County, Pennsylvania.

PALES WEEVIL (Hylobius pales) Generally active in all states in the region. Stumps sprayed experimentally in Pennsylvania with 1/5 lb. 10% gamma BHC per gallon of water reported to give good control.

ENGRAVER BEETLES (Ips spp.) Increasingly abundant in nearly all states in the region. Reported as causing considerable injury to Scotch and Virginia pines in Juniata County, Pa., with adults emerging about May 16.

MISCELLANEOUS INSECTS ON CONIFERS The pine needle miner (Exoteleia pinifoliella) is prevalent again on pitch and shortleaf pines in southern New Jersey. Balsam woolly aphid (Adelges piceae) reported on increase in Hamilton County, N.Y. Red and black turpentine beetles (Dendroctonus valens and D. terebrans) active at scattered locations throughout region - generally associated with windthrow, logging injuries, etc. D. terebrans heavily infesting living white pines in Pendleton County, W. Va. The pine bark aphid (Pineus strobi), spruce gall aphid (Adelges abietis), and other twig and foliage infesting aphids unusually abundant in most states. A spruce needle miner, possibly Epinotia nanana, attacked Norway spruce in Trough Creek State Park, Pa. Larch sawfly (Pristiphora erichsonii) present for 5th year on Japanese larch near Renovo, Pa. On May 28 all stages from eggs to pupae were observed. Numerous branches on young red pines at Bartlett, N.H. were killed this year by the pine gall weevil (Podapion gallicola). A needle miner (Recurvaria apicitripunctella) was unusually prevalent on hemlock in the vicinity of Durham, N.H.

GYPSY MOTH (Porthetria dispar) The aerial spraying programs completed this spring were as follows: Pennsylvania - 107,000 acres under State contract and 380,000 acres under Federal contract; New York - 2,305 acres; Connecticut - 10,808 acres; Massachusetts - 9,700 acres; Maine - 137 acres (Coop. Econ. Ins. Rept. 8(25), June 20, 1958.) Sharp decreases in infestation have been reported from New York and Connecticut particularly.

FOREST TENT CATERPILLAR (Malacosoma disstria) Populations are widespread but generally light throughout Pennsylvania. Larvae found on red and white oaks in Adams, Franklin, Cumberland, and Westmoreland Counties. Severe defoliation of commercial sugar bushes in Somerset County was reported. Larvae were in the 4th instar about May 20, and some had cocooned by June 6. About 300 acres of mixed hardwoods were stripped in Pendleton County, W. Va. Feeding observed also on Town Hill Mt., Maryland.

MISCELLANEOUS INSECTS ON HARDWOODS A looper (Phigalia titea) caused complete defoliation of over 2000 acres of maple, oak, cherry, sassafras, and dogwood on South Branch Mt. and 75 percent defoliation of the same hosts in 300 acres on Sandy Ridge Mt., Hardy County, W. Va. Infestations by this insect in this area are apparently not new. Heavy defoliation by the fall cankerworm (Alsophila pometaria) occurred on 100 acres in York County, Pa. Several species of leaf-rolling Lepidoptera caused moderate to severe defoliation of scarlet, red, and black oaks in scattered "oak mortality" stands in Pennsylvania. Two species identified as Argyrotaxa semipurpurana and A. albicomana. Mound building ants have caused the death of young white pines at a number of locations in Massachusetts and New Hampshire.

FOREST DISEASES

ANTHRACNOSE (Gnomonia veneta and Gloeosporium sp.) Sycamore anthracnose is unusually severe and widespread throughout the Northeast. It is well to recall - "The first symptoms of the disease resemble injury by late frost. Later, brown areas fleck the leaf irregularly or follow the veins to the leaf margin. The fungus kills the tips of the twigs and causes cankers on the branches." - From USDA Farm. Bul. No. 1987.

Pennsylvania reports white oak and sugar maple anthracnose occurring to a much lesser extent than sycamore anthracnose.

The Massachusetts Shade Tree Laboratories report that the cool moist 1958 spring has encouraged leaf disease in general, but particularly the anthracnoses, caused by various species of Gloeosporium, which have been found on foliage of white oak, sycamore, ash, mountain-ash, quaking aspen, horsechestnut, Norway maple, red maple, and sugar maple. Affected sycamores are now pushing forth a second crop of leaves.

BEECH SCALE - NECTRIA Viable ascospores were obtained from perithecia of Nectria coccinea var. faginata on beech bark collected on the Bartlett Experimental Forest, May 22 and 27. In the Laconia Laboratory, ascopore ejection was induced in moist chambers. Ascospores germinated readily on cover slips used to trap spores above the perithecial mouths.

FOLIAGE DISEASES

ASH LEAF RUST (Puccinia sparganioides) Is reported on ash growing near tidal marshes in the vicinity of Durham, N.H. Uredial pustules were not found on Spartina sp. in this immediate area.

PURPLE-EYE LEAF SPOT (Phyllosticta minima) Is fairly common on red maple, according to a report from New Hampshire.

LEAF AND SHOOT BLIGHT OF ASPEN (Napicladium tremulae = Fusicladium radiosum) Appears to be widespread this year. It does not seem to be doing much damage.

WILLOW BLIGHT (Fusicladium saliciperdum) Is widespread and fairly abundant this year, in contrast to its occurrence the previcus year. So far, F. saliciperdum seems to be more common than the Physalospora miyabeana part of this willow-disease complex.

Massachusetts reports that Macrophoma candollei caused severe leafcasting on boxwood in Amherst. Pestalotia and Phyllosticta leaf spots on Rhododendron were more frequent this spring, according to the same source of information.

A Taphrina, believed to be T. carnea, was observed on yellow birch in New York State. It is not important.

*****

NURSERY AND PLANTATION DISEASES (Adelopus gäumanni and Rhabdocline pseudotsugae) The Northeastern Forest Experiment Station has begun field experiments to find an economical method of controlling Adelopus and Rhabdocline leaf-cast diseases in Christmas tree plantings in the Northeast. Cooperative spray control methods, using some of the newer fungicides, are being tested in Vermont and Connecticut. Reports of the presence and severity of these leaf casts will be welcomed by the New Haven Forest Disease Laboratory.

OAK WILT (Ceratocystis fagacearum) The Forest Service has plans for appraising the effectiveness of the different control methods now used by the various States in the East. The objective of this appraisal is to find which method is best and most economical to use.

ROOT ROTS Observations in New Jersey, Massachusetts, and New Hampshire showed that fruiting bodies of Fomes annosus had resumed growth by mid-May. No well-developed, bracket-type conks had formed, although new growth was evident in abnormal conk-growth just beneath the duff line on a few stumps. New growth was also evident on underground, resupinate sporophores. Fresh resupinate conks were observed on lower courses of red pine wood piles, piled on severe infection sites. Pennsylvania reports finding F. annosus in a 40-year-old white pine plantation near Mt. Alto this January.

In southern New Jersey, fruiting bodies of Corticium galactinum, Poria subacida, and of a brown cubical butt rot, probably a Merulius or Coniophora sp., appeared to be more abundant than F. annosus on stump roots in a 40-year-old white pine plantation being harvested. In fact, F. annosus was rare in this plantation, only 1 stump being found infected by the fungus.

Occasionally Armillaria mellea root rot was observed in conifer plantations in the Northeast, usually at the bases of trees or on small stumps of suppressed trees. Recently your reporter saw approximately 750 acres of sodium arsenite poisoned hardwoods in New York state, that had been standing for 2 years following poisoning. A large percentage, estimated at more than 75%, had A. mellea growing in the cambial region of the butt roots and stump portions of the poisoned beech, maple, and yellow birch. Characteristic mycelial fans and rhizomorphs of the fungus were present. So far, very little wood rot is associated with the infections.

RUSTS

WHITE PINE BLISTER RUST (Cronartium ribicola) Aecial stages were commonly observed in New Hampshire and northern Massachusetts during the first half of May. Environmental conditions provided by ample rains and suitable temperatures probably presage "a bad rust year" for areas in need of blister rust control. However, lower-than-average temperatures have delayed and prolonged fruiting. A report dated June 26 states that uredial pustules have not appeared on Ribes leaves in western New Hampshire. It is believed that cool weather has delayed blister rust development in all its stages. New Hampshire reports aecia still sporulating on June 19th. Near Syracuse, N.Y. aecia first appeared May 6. Yellow margins of cankers are just now coloring sharply but with no evidence of pycnia as yet (June 20). Last year pycnial exudate was flowing by this time.

Gymnosporangium spp. May provided excellent conditions for the telial production of several species of the genus throughout the Northeast. This rust appeared in unusual abundance. Observations on various species of Gymnosporangium are:

1. G. clavariaeforme. This species was abundantly fruiting on dwarf juniper in New Hampshire and Massachusetts, and probably abundant in all dwarf juniper areas. The dwarf juniper host is a very variable species, and a very striking degree of host infection was observed varying from extreme susceptibility to probably complete immunity. During the first

week of May, telial germination and abundant sporidial formation was observed in New Hampshire. On June 23, an abundance of aecia occurred on Amelanchier, presumably formed by this species of rust.

2. G. clavipes. This species commonly occurred on red cedar in Massachusetts and Connecticut. Variation in red cedar susceptibility seemed common, according to limited observations and collections made this year. One red cedar might have many rust cankers scattered through it while others nearby remain unaffected.

3. G. juniperi-virginianae. This species is widespread and the most common in the Northeast. It fruits abundantly, and is found nearly everywhere that red cedar grows in the Northeast. Other species of Gymnosporangium often occur on the same host with this species; for example, G. clavipes and G. nidus-avis. The abundance of the cedar-apple fungus and the May weather conditions were judged favorable for the infection of its alternate host, viz., Malus spp. The apple-rust phase should be very common in certain red-cedar localities this year. Many newly-formed cedar apples were observed on the red cedars.

4. G. nidus-avis. Either this species, or G. effusum, was observed in southern New England this spring. Both species produce similar fusiforme cankers on red cedar stems and branches. The former, is supposedly more common and also forms witches'-brooms, while the latter does not. As no witches'-brooms were found associated with the rust, perhaps G. effusum occurred rather than G. nidus-avis. However, some authors consider G. effusum to be synonymous with G. nidus-avis.

5. & 6. G. biseptatum and G. ellisii. Both species are common on Atlantic white-cedar, Chamaecyparis thyoides, in southern New Jersey. The former causes stem cankers on its host, while the latter produces a witches'-broom. Oftentimes both species occur on the same tree.

OTHER RUSTS New Hampshire reports a severe needle rust on pitch pine in the southern part of the State. New York has reported aecia as quite abundant on hard pine foliage by mid-June.

WILT DISEASES - DUTCH ELM DISEASE (Ceratocystis ulmi) is showing up in abundance compared to last year, in spite of ample moisture supplies, which tend to suppress wilt symptoms to some degree. Frequent occurrence of the disease has been noted in New York, Massachusetts, Connecticut, and southern Maine. Delaware reports losses equal to last year's. A survey of Kent and Sussex Counties in Delaware revealed infection of over 50% of the elms planted along U.S. 13 highway between Smyrna and Dover. Massachusetts reports foliar symptoms of Dutch elm disease became widespread as of the last week in June. Last year wilt was widespread during the first week in June, but the number of samples tested this year at the Shade Tree Laboratories (Univ. of Mass.) is greater than for any previous year. During 1957, 10,231 positive diagnoses of Dutch elm disease were made out of over 15,000 specimens cultured from elms in the 351 cities and towns of Massachusetts.

Massachusetts also reports that Verticillium albo-atrum has killed many maples. In one neighborhood, 3 sugar-maple street trees, not adjacent, died this winter. They showed vascular discoloration indicating infections as early as 1952. It is believed that acceleration of their death may be another effect of last summer's drought.

Pennsylvania reports V. albo-atrum killed Norway maples near Highspire, Pa.

Delaware reports Mimosa wilt (Fusarium oxysporum f. perniciosum) prevalent and increasing in intensity in Sussex County. Typical cultures were isolated from infected trees.

WITCHES'-BROOMS Witches'-broom of cherry (Taphrina cerasi), as usual, is widespread and common throughout the Northeast.

Vaccinium witches'-broom (Calyptospora goeppertiana) is widespread in New England and was observed in its usual abundance in New Hampshire and Massachusetts. The year-after-year abundance of this rust raises a question as to the lack of reports of the rust on its alternate host, viz., the firs.

Witches'-broom of willow (cause unknown). Well-defined brooms were observed on at least 2 species of willow in New Hampshire. In checking records of Taphrina and rust species, both common causes of witches'-brooms, none were reported as producing this type of malformation on willow. As its cause is unknown, the New Haven Laboratory is interested in any reports of the disease on willow. How common and widespread is it? What is its cause?

Unknown, Non-parasitic, or Environmental Diseases

DIEBACK It is too early in the season to evaluate dieback conditions and to assess the carry-over effects of last year's severe drought and hot summer weather. Limited observations in New England show many dieback trees characterized by a staghead condition, or by scattered dead branches throughout the crown. There is an abrupt change between the dead wood and the green, generally thrifty leaves in other parts of the dieback trees. The cool, wet, early season weather is undoubtedly reflected in the lack of small, yellowed, or dead leaves, or by a graduation of foliage symptoms from dead wood to the more vigorous parts of the tree crowns. These may develop later. It has been noted, however, that many roadside sugar maples which showed severe dieback last year, now appear to be totally dead.

In parts of Maryland, particularly on the Eastern Shore and adjacent areas, many sweet gum trees have died or show severe dieback. This may be associated with "sweet gum blight." However, other species in the same general region also show dieback. The oaks seem to be quite severely affected. This was also observed in southern New Jersey. Still other species affected by dieback are common, though the sweet gums and oaks are most notable. The condition appears to be a carry-over effect from last year's drought. Delaware reports oak dieback, of unknown cause, continuing to disfigure and kill red oaks throughout the State. Symptoms are now appearing as reddish foliage on previously and newly affected limbs.

DROUGHT Massachusetts reports that mixed natural stands of Pinus strobus and P. rigida, on several sandy sites in the hills east of the Connecticut River Valley, have an all-over brown appearance caused by the death of the distal parts of the 1957 needles. Their 1958 needles, only partly emerged, are healthy. The white pines look relatively healthy despite light to heavy

bark aphid infestations. No fungi or insects seemed uniformly associated with the foliage browning of pitch pine, but its uniformity over all the trees suggests that it is an effect of last summer's drought.

Probably another effect of the drought has been the apparent increase in attacks by Armillaria mellea whose rhizomorphs were found associated with several dying trees, including Pinus resinosa in Ayer, Mass. and Euonymus alata in Williamstown, Mass., where fill had killed some of the lower bark.

From New York comes a report of sparse foliage in sycamores near Syracuse. Quoting, "Well-formed buds fail to open but seem alive. Perhaps due to lack of moisture last season, for we have had ample this spring. Usually the foliage would be lush at this time." This report came from an experienced forest pathologist, and as anthracnose was not mentioned, the report is of special interest.

DYING TREES New Hampshire reports many large and old white pine dying near highways. Salt run-off over unfrozen ground has provided high salt concentrations in the soil and is suspected as the cause. Winter killing, salt injury, and needle blight all seem associated with the trouble.

J.C. Nelson discusses dying of mature hemlock in the Cook Forest of Pennsylvania, in an article published in the Journal of Forestry, Vol. 56, No. 5, May, 1958. This is similar to the dying hemlock on the Massabesic Forest in Maine, as reported in last year's PEST REPORTER.

WOOD DISCOLORATION Pennsylvania reports an unknown Hymenomycete as associated with a reddish discoloration in the basal portion of white pine near Mt. Alto. Samples of a similar discoloration in red pine, from Connecticut and also from New Jersey, submitted to the New Haven Laboratory for culturing, yielded a Hymenomycete in both instances. These isolations were considered secondary and not causing the death of the red pines.

FROST DAMAGE On June 7 a frost killed the foliage of trees and shrubs in a few spots in the pine region of southern New Jersey. Your reporter saw late frost damage to red oak foliage in southern Maine. In southern Maine, frost damage also occurred to the newly emerged, tender balsam fir tips.

SNOW DAMAGE Heavy wet snows last winter caused an abnormal amount of damage in southern New Jersey and eastern Maryland. In New Jersey, Atlantic white-cedar was the most susceptible species, and many stems were broken or permanently bent. Similar damage occurred in some loblolly pine plantations, but was important only where stems were about 10 feet tall and had large branches. Natural reproduction or planted trees mixed with many volunteers, even though of similar size, suffered relatively little damage.

WINTER INJURY Heavy winter injury occurred on southern stocks of shortleaf pine grown in the Washington Crossing Nursery, for an out-planting of south-wide seed-source study in southern New Jersey. Of the stocks from 7 sources, only the New Jersey stock escaped without any noticeable injury.

CHLOROSIS OF OAK Pennsylvania reports chlorosis of pin oak shade trees in scattered locations in the state.

WIND DAMAGE High, gusty winds of June 14 - 17, were general throughout the Northeast. Fortunately, soils were not saturated with moisture, or serious blow-down damage would have occurred. Damage to healthy, vigorous sugar maples and some defective beech is reported from the Bartlett Experimental Forest in New Hampshire. Breakage of defective species and blow-downs of healthy trees have been noted in the New York Adirondack region, Massachusetts, and Connecticut.

* * * * * * * * * * *

Recent publications of interest to PEST REPORTER readers:

1. "A summary of current forest pest problems for New York State." Compiled by The Committee on Insects and Diseases, Society of American Foresters, New York Section. Extension Department, State University College of Forestry, Syracuse University, Syracuse 10, New York.

2. "Polyporaceae of North America - The Genus Fomes" by J.L. Lowe. Technical Publication No. 80, Dept. of Forestry Extension, State University College of Forestry, Syracuse 10, New York.